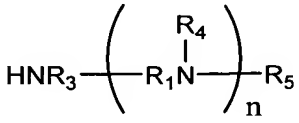
REMARKS

Claims 14-29 remain in the application, resulting in a total of 16 claims remaining in the case. Claim 14 is amended to recite additional distinctions that are patentable over the cited references. Support for these distinctions appears on page 10, line 19 to page 11, line 12 of the specification.

Claims 14-17 were rejected under 35 U.S.C. § 102(b) for anticipation by WO 01/59213 to Howland et al. Claims 14-29 were also rejected under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 6,162,329 to Vinson et al. and U.S. Patent No. 6,033,523 to Dwiggins et al. and further in view of Kazuyoshi Asakura et al. (JP 2002-275786A, a translation of which was enclosed with the final Office Action). Applicants respectfully traverse these rejections as applied to claims 14-29.

Howland et al. disclose that an amide compound may be used as a paper additive agent and sets forth a polyaminoamide compound having the following formula:



wherein R_1 is a hydrocarbon side chain of a saturated or unsaturated fatty acid; R_3, R_4 and R_5 are independently selected at each occurrence from H and $R_2C(O)$- and n is 2, 3, 4 or 5, provided that at least one of R_3, R_4 and R_5 is H and at least one of R_3, R_4 and R_5 is $R_2C(O)$-. Furthermore, in another preferred aspect, at least two of R_3, R_4 and R_5 are H and at least one of R_3, R_4 and R_5 is $R_2C(O)$-. While the formula for a polyaminoamide compound disclosed by Howland et al. could, in theory, result in a ratio of tertiary amine to total amine of 0.67 or 0.75, such ratios are not achievable without practicing the method of the present invention.

As Applicants had stated previously, the amide compound (a) used in the present invention is a particular amide compound obtained from the specific polyamine and the specific carboxylic acid set forth in claim 14 and satisfies the specific ratio of a tertiary amine value to the total amine value of the amide compound of 0.60 to 0.99. As amended, claim 14 recites this amide compound as being produced by two reactions. In the first reaction, the polyamine and carboxylic acid are reacted until the acid value of the reaction mixture reaches about 10% of the theoretical acid value of the initial mixture of the raw

materials, and the second reaction allows the reacted product of the first reaction to proceed until the acid value is reduced to 75% or less of the acid value of the first reaction, which is 10% or less of the theoretical acid value of the initial reaction mixture. Thus, it is necessary that the amide compound (a) of the invention as now recited in claim 14 be produced by a two-step reaction process. Applicants refer the Examiner to the description beginning on page 10, line 19 and continuing on page 11, line 12 of the specification.

This two-step reaction process for producing the amide compound (a) of claim 14 will be better understood with reference to Examples 1.1 to 1.17 in Table 1 of the specification. With regard to these Examples in Table 1, an acid value in the first stage represents a theoretical value calculated from that of the raw materials; an acid value in the second stage (first reaction) represents a value obtained by reacting polyamine and carboxylic acid at 180°C for two (2) hours (page 21); and an acid value in the third stage (second reaction) represents a value obtained by dehydration of the reaction product after the second stage (first reaction) at a temperature of 180°C under a reduced pressure of 10 torr for 5 hours (page 21).

It can be seen in Examples 1.1 to 1.17 that the acid value in the second stage (first reaction) is 10% or less of the theoretical acid value (that is, the acid value in the first stage) and the acid value in the third stage (second reaction) is 75% or less of the acid value in the second stage (first reaction). Such amide compounds (a) in Examples 1.1 to 1.17 have the ratio of a tertiary amine value to a total amine value of 0.60 to 0.99 as claimed in claim 14.

Ergo, it is necessary that the amide compound (a) of the invention be produced in a two-step reaction process. This can be contrasted to a conventional amidation reaction. In a conventional amidation reaction, the carboxylic acid is reacted with amino groups and the reaction predominantly proceeds until the acid value of the reaction mixture reaches about 10% of the theoretical acid value of the initial mixture of the raw materials. In this instance, the resulting amide compound has a ratio of tertiary amine value to the total amine value ranging from 0 to 0.4. If the acid value becomes less than 10% of the theoretical acid values of the initial mixture of the raw materials, a reduction of the acid value relative to the reaction time becomes small. Therefore, in the conventional method for producing an amide compound, the amidation reaction is stopped at this stage where the ratio of the tertiary amine value to the total amine value ranges from 0 to 0.4.

Applicants again refer the Examiner to Table 1 with particular reference to Comparative Examples 1.4 to 1.9. No dehydration process was performed in a third stage (second reaction) for Comparative Examples 1.4 to 1.9. The amide compound of these comparative examples was produced by a conventional amidation reaction involving only a single-step reaction which may be equivalent to the first reaction step of the invention. This being the case, these amide compounds of Comparative Examples 1.4 to 1.9 have a ratio of a tertiary amine value to a total amine value of about 0.4 as illustrated in Table 1 of the specification. To emphasize, the amide compound of the claimed invention is produced by a dehydration process in the third stage (second reaction) resulting in a ratio of the tertiary amine value to the total amine value greater than 0.4, and in particular ranging from 0.60 to 0.99.

A further point Applicants wish to make is that the claimed invention of claim 14, as amended, recites that the amide compound is obtained by reacting the carboxylic acid at a ratio of 0.5 to 4.3 moles per 1 mole of the polyamine in this two stage reaction process . Page 9, last paragraph to page 10, first two paragraphs of the specification of the patent application discloses the importance of this ratio of carboxylic acid to polyamine for producing bulky and soft paper. This ratio along with the two step reaction now recited in amended claim 14 is important for producing an amide compound having the ratio of tertiary amine value to a total amine value greater than 0.40 as described in the specification from page 10, bottom line to page 22, line 5, and the amide compound having the ratio of tertiary

amide value to a total amine value of 0.60 to 0.99 is used as an additive in the production of soft paper.

The amide compound of the invention is distinct from the amide compound disclosed in Howland et al. This reference merely discloses an amide compound that is obtained by reacting polyamine and carboxylic acid through a conventional amidation reaction as explained in the preceding paragraph. Therefore, it is impossible for the amide compound of Howland et al. to have a ratio of a tertiary amine value to a total amine value ranging from 0.60 to 0.99. In summary, Howland et al. fails to disclose or suggest a two-step reaction process for producing an amide compound similar to that of the claimed invention.

As stated in the previous Amendment, the importance of the specific amide compound recited in claim 14 is appreciated when referring to Example 3.5 and Comparative Example 3.3 appearing in Table 4 of the specification. In Example 3.5, when the amide compound (a) having a ratio of tertiary amine value to total amine value of 0.61 was used, the paper had a high level of softness. On the other hand, as reported in Comparative Example 3.3, when the amide compound which was obtained by a two-step reaction but has a ratio of tertiary amine value to total amine value of amide compound (a) of only 0.52, a high level of softness was not obtained. This demonstrates that when the amide compound (a) is a specific amide compound obtained from the claimed polyamine and carboxylic acid in a two-reaction step and has a ratio of a tertiary amine value (a chemical characteristic) and a total amine value (a chemical characteristic) of 0.60 to 0.99, a paper having a high level of softness is obtained. In the absence of any teaching or suggestion in Howland et al. to produce soft paper using the amide compound of amended claim 14, being obtained by a two-step reaction and having the ratio of tertiary amine value to total amine value of 0.60 to 0.99, the claimed invention of amended claim 14 as well as claims 15-29 are patentable over the Howland et al. reference.

The Vinson et al. patent was cited for disclosing a softening agent comprising quaternary ammonium compounds; that wet strength agents such as polyacrylamides can be used in the papermaking process; and that tissues can be made using recycled paper. The Dwiggins et al. patent was cited for disclosing that softeners can be added as mixtures to produce a soft sheet. Asakura et al. was cited for disclosing an amide compound as an additive for making paper using recycled paper that improves the bulkiness and oil absorption

of the paper. This amide compound is made from the reaction of fatty acids having from 10 to 24 carbon atoms and a polymine compound.

The amide compound of Asakura et al. also fails to disclose or suggest the amide compound (a) of the claimed invention which is obtained by a two-step reaction as now recited in claim 14. Applicants submit that nowhere do any of these three cited references suggest the combination of their teachings to combine the particular components of the amide compound (a) of amended claim 14, along with the quaternary ammonium compound (b) and/or a polyacrylamide compound (claims 20-22, 24-26 and 28-29) of the invention. Accordingly, claims 14-29 are considered by the Applicants as being patentable over these three cited references.

Applicants are filing a Request for Continued Examination (RCE) and a petition for a three-month extension of time for extending the term for reply to the final Office Action dated July 7, 2006 to January 7, 2007.

Respectfully submitted,

THE WEBB LAW FIRM

By _____

Julie W. Meder
Registration No. 36,216
Attorney for Applicants
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219-1845
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com